SUNDAY, MARCH 29, 1896.—40 PAGES.

TO FIND OUT HOW MUCH FOOD WE OUGHT TO EAT.

Prof. Tower, the First Experimenter, Writes of His Five Days in the Sealed Box at Wesleyan University.

Professor O. F. Tower, of Wesleyan University, presents in narrative form a most interesting diary of his experiences in the ten-foot sealed box during the five days of his experiments to discover the actual values of various foods. Prof. Tower's is the first of a series of scientific tests to find out what articles of food give the greatest nourishment to the body, and also to establish other facts for the intelligent and economical saving of the energy and wear and tear of the human system.

MARCH 16.

I ENTERED the calorimeter cell at 10:30 a. m., amid the jests of the assembled spectators. The Swede who had previously been in here wanted to give odds that I would be out inside of thirty-six hours. This wasn't encouraging, but still I was willing to make the trial.

The feeling on entering was similar to that which one feels when one embarks for Europe. I felt as if I were severing the ties which bound me to my friends and acquaintances and starting off on some six days' voyage, during which I should be shut off from intercourse with my fellowmen. It had this distinguishing feature, however, that this journey was to be made entirely alone. I was the only passenger and I could only talk with the crew by telephone.

I calmly watched the inner glass window pane put in place, and the attendant puttying it in. I realized then that the last hand had been grasped and the last farewell said, and that my experience in the calorimeter had really begun and that I was to live, move and have my being for the next few days in a copper-lined chamber of about thirty square feet area, and about six feet high.

Just before entering the calorimeter I visited the gymnasium, took a bath, and clothed myself for Summer in an outing shirt and a pair of duck trousers, and I felt really very comfortable sitting here writing in this negligee.

The first three-quarters of an hour I spent arranging things, and particularly in fixing an air pipe connection, which seemed to have a desire not to be fixed. My wrath rose in proportion to its obstinacy, until one of the attendants telephoned in that I was getting things too hot in here. I therefore paused and commenced to vent my anger in words. But it occurred to me that no one could hear me, so this failed to afford relief to my troubled feelings. I sat down and cooled off for a minute and then went at it with better success. Next I applied myself to taking an inventory of my possessions, and found myself somewhat better off than Robinson Crusoe. I have a cot bed, a table, chair, two rugs, a pillow and a cushion, a blanket, a sweater, some books, papers, writing paper and envelopes, a mirror and a dygrometer. This last is an instrument to measure the amount of water vapor in the atmosphere, in other words to indicate the moistnre of the atmosphere. I have hung it up in a suitable place in the back end of the calorimeter, and have already had occasion to take readings twice and telephone them out, and I haven't been here but an hour and a half yet. I apprehend taking these readings will be a source of annoyance when I wish to rest.

LIFE IN LIMITED QUARTERS.

By 11:15 I got settled, and proceeded to write some. I then picked up 'House Boat on the Styx," by John Kendrick Bangs, and read two chapters, after which I took down my cot and turned in. Couldn't go to sleep, however, and the New York papers being passed in soon, I lounged around and read them until I was called up on the telephone to read the hydrometer, and also notified that dinner would soon be ready. Put up my cot and set the table. This having to do everything in thirty square feet is hard luck. A person doesn't more than get his bedroom arranged before he has to convert it into a dining room, and in a few minutes more the dining room must be converted into a sitting room. Keeping house here is, therefore, no easy matter. However, this continuous process of change tends greatly to relieve the monotony of the situation.

My dinner was passed in steaming hot, and tasted very good. I worked up quite an appetite getting settled. Living on the same thing every day isn't quite so bad as I expected. This is the sixth day I have had the same dinner, and it tasted as well as it did the first day. Temperature in here now, 1:20 p. m., 21.3 degrees C. This is about seventy degrees Fahrenheit. I am perspiring somewhat, due mostly, however, to drinking so much hot coffee.

After dinner I tried to sleep, but just as I was dropping off the bell which registers the flow of the water commenced ringing, and brought me to myself again. Soon after the pillow commenced to feel hard, so I threw it away and substituted the cushion, which was a decided improvement. But by this time I was as wide awake as a resident of Jersey in mosquito time, so I decided to get up and read a while.

One of the men then called for the hydrometer readings (confound the dydrometer!)—after which I was left in peace to read. Read several chapters in "The House-Boat on the Styx," interrupting myself once to argue with my attendants and try to get them to reduce the heat, which they said they would do.

About 4 p. m. the room cooled down to 20.5 C., and felt very comfortable. Finished the "House-Boat on the Styx" about 5 p. m., and passed it out. The next hour until supper I spent calculating some results from some original investigations which I had previously made in the field of physical chemistry. I worked rather languidly at it, as I was told to take life easy the first two days I am in here. After getting what enjoyment I could out of my frugal bowl of bread and milk I loafed on the cot for an hour, and then read the evening paper.

ONE UNPLEASANT FEATURE.

The worst thing about this place so far is the way I get shaken up when the freezers are filled. It seems then as if I was in the stateroom of an ocean liner during a storm. Thank Heavens, the freezers are not being filled all the time! Can hear noises in general in the outside room much better than I had expected. Can distinguish the voices of persons speaking, and can occasionally catch a word of what is said. The sound probably comes by way of the outlet cylinder, through which things are passed to me, being caused by the reverberations of the brass caps on it. At any rate it seems less lonesome and more as if I were not shut off from the world to be able to distinguish human voices. Turned in at 9:50. Temperature of room 21.8 C.

MARCH 17.

Woke up at 5:30 feeling pretty well; head a trifle dull, however. Rang up one of the men, and had a drink of water and a moist towel to wipe off my hands and face passed in to me. It seems that I am not to be allowed to have any water in an open dish to wash in. It disturbs the accuracy of the experiment. This is camping out with a vengeance. However, I'll keep them busy passing in moist towels.

I feel terribly hungry, and now, at 7:25, my caterer hasn't as yet put in an appearance to get my breakfast. He will have to turn over a new leaf or there will be a row.

7:30—My steward has just arrived, thank Heaven! He informs me that sleighing is good. That's a mean thing to tell a man under these circumstances. However, St. Patrick seems to be doing the best he can for the people outside, which is, nevertheless, poor consolation for me. But life hasn't become a burden yet. When it does—there is a strong pulley overhead and enough electric light wires about so I can string myself up, if desirable.

After eating breakfast the dulness in my head passed away. Guess it was caused by the reverberation of the walls resulting from the shaking of the apparatus by the electric motor in the room. Don't think the air had anything to do with it, as it seems perfectly good.

After reading the morning papers, worked moderately on my calculations till dinner time. Appetite continues good, but there seemed to be a good deal for an idle man to eat. I set the pace for this diet before I came in, while I was working, and it seems hard luck to have to keep the same quantity now. Still, as long as my appetite keeps up I can dispose of it without much difficulty.

AN AFTERNOON PROMENADE.

After dinner took a little exercise by walking up and down, and afterward felt as well as when I first came in. I may grow to like this place so well as to hibernate here till Summer arrives. Spent the rest of the afternoon reading, writing and looking at visitors. My visitors' list shows fifteen names for the day. I presume visitors come up here to see me for the same reason they go to the Zoological Gardens., viz., to see the caged animals. This is the way it seems to me, at least. People look at me as if I were some wild man just imported from Borneo. This doesn't cause particularly pleasant sensations on my part.

Seeing so many new faces tends, however, give to me something different to think of—breaks up the monotony, and so tends to neutralize the menagerie feeling. The ladies, unfortunately, seem to have a hard time using the telephone, and consequently I can't talk much with them. Received a few letters during the afternoon, which also lent variety to life, and left me more contented to continue in my present abode. It is a good place to escape creditors.

After supper I reclined on my cot and read some from Victor Hugo's "Les Miserables." Later, on hearing my cousin was sick, I sent him a note of sympathy, and got an almost immediate reply saying that I was probably better off than he, since mine was a voluntary confinement and his was not.

During the evening, as I was lounging about, I thought I heard a dog barking in the outer room. I sprang to the window to see what was the matter, but discovered it was nothing more than one of the men trying to sing.

Was just getting ready to go to bed, when a noise like all the Furies turned loose caused me to turn my attention to the rear end of my abode. I found the airpipe, over which I had lost so much grace the first day, had come apart. The connecting rubber tubing had split. A new piece of tubing was passed in to me, and I proceeded to repair damages. My former experience served me a good turn now, and I fixed things up without any visible or audible signs of wrath. This is certainly a good place to cultivate one's patience in more ways than one.

Have, of course, reported the hydrometer readings at various intervals during the day. It is getting to be more of a habit now, and doesn't trouble me as it did yesterday. Retired at 10:20.

MARCH 18.

Woke up at 6 and read the hydrometer. Was disturbed first at 3:30 a. m., by a big din just outside my window. Heard some one sing out soon afterward, "Twenty minutes of 4." Presume something broke down, but haven't learned what yet.

9 a. m.—Just learned that one of the pipes which runs near the freezer froze up last night. That accounts for the unearthly disturbance which aroused me before daybreak. Felt about the same as yesterday morning, when I woke up; head a trifle dull. After breakfast it passed off. My steward was on hand promptly at 7—thanks to the blowing up I gave him yesterday—so I had breakfast promptly at 7:30.

After transforming my dining room as nearly as possible into a gymnasium floor, I proceeded to take some rather violent exercise—practised clog-dancing, arm-swinging and pillow-fighting—until I felt as if I had taken half an hour's cross country run, and was in a dripping perspiration. Sent the thermometer up to 22.8C., the highest it has been as yet. I noticed my attendants were kept busy taking thermometer readings outside.

Read "Les Miserables" and the morning papers till noon. After dinner I turned in and tried to sleep. But two of the men were talking at the top of their voices, which had a tendency to keep me awake. I, therefore, tried to see how much of the conversation I could understand, and managed by listening diligently to get the drift of the conversation. They were talking about Smith's coming in here next week, and laying plans to keep him busy. I finally dropped off to sleep.

Was awakened by dreaming that the devil was chasing me. Knew something must be wrong, and on looking up at the window, saw one of the attendants looking down at me. He wanted the hydrometer readings. Wish that hydrometer was at the bottom of the sea.

Folded up my cot and went to work on my calculations. Was interrupted soon by some visitors and had to go on exhibition for an hour. After this I held a protracted correspondence with Professor Atwater by letter. This is novel—writing letters to persons only three yards from you. It tends, however, to give variety to life in here, without which this kind of life would fail to appeal to me. As it is, I am getting on famously, and can stand it for some time to come.

PLUNGED INTO MATHEMATICS.

After supper I spent the evening on my calculations, with the exception of a short period when my signal bell got out of order. It was necessary to remove my electric light from the window to fix it, so I was left in comparative darkness. Could see the process of repairing going on, however, and it afforded me some amusement to see some one worrying over that bell, as I did over the air pipe in here. I could see the poor man's lips moving, trying to express his feelings in words.

The sight was touching, so much so, that I could not help lying on my cot reflecting on the inconsistencies of human nature. We will work on some hard problem by the hour proving nothing, and yet feel we have not wasted the time; while again, if we are compelled to do some insignificant thing for a few minutes, we work ourselves into a dreadful stew and feel we are fools for not doing it sooner, while we are really gaining a lot of valuable experience all the time, worth more to us, perhaps, than knocking our heads for half an hour with a pencil trying to solve the problems of the universe.

My reflections were interrupted here by the light being returned, and I had to get up and see if the bell worked. Found that it did, and noticed also that the man who fixed it regarded me with a look, as if I were responsible for all his troubles. Guess he would be glad to get me out of here, so as to relieve him from working fifteen hours a day. However, now I am in here, it isn't going to be an easy job to get me out.

The man who was betting I would be out in thirty-six hours is going around looking rather crestfallen. I felt sorry, though, for the poor fellows out there who have to work so hard to make me comfortable, while I live a life of ease. Turned in at 10:20. Visitors' register shows ten names.

MARCH 19.

Woke up about 5 a. m. and tried to go to sleep again, but something went wrong outside, as usual at this time, and the men were tearing around so, like mad, that sleep was for the time being impossible. Things finally got quieted down, and I fell asleep about 6:30, to be awakened by my call at 7:30, to get ready for breakfast. Metamorphosed my sleeping room into a dining room, and went through with the moist towel act in about five minutes. This is the regular log-cabin style of living, only I don't have to prepare my own eggs and bacon for breakfast. Unfortunately I can't even vary my diet with bacon.

This is the ninth morning I have eaten eggs for breakfast. My appetite for them doesn't seem to decrease much, although a good, juicy sirloin would, of course, have its superior points. The coffee I get tastes excellent. I feel as well as I ever did, this morning. I judge from the way it is raining and blowing outside that I am just as well off in here as elsewhere, if not a little better.

People may wonder if I don't occasionally have some weird fancies in here—if I don't get to thinking that the air supply may get shut off, or something else happen to make me uneasy. But I have no fear or uneasiness whatsoever. There are three men constantly on duty outside, and if anything happened they would be sure to know and release me at once, so I feel perfectly secure. I feel, though, that it would grow unbearably monotonous if I didn't have plenty to do. But, fortunately, I am not troubled that way, but would have plenty to keep me busy if I should stay a week longer.

11:30 a. m.—Have just finished reading the morning papers and writing three letters. One of the chief constructors of this chamber has just looked in on me with that sort of a grin of satisfaction on his face which Satan is supposed to have when he has caught a victim and is toasting him over the coals. The victim, however, in this case toasts hard.

Worked hard all the afternoon on my calculations, being scarcely disturbed by visitors. It is too stormy outside. Only four have registered.

Shortly after supper the water circuit sprung a small leak, which I soon repaired. A man has to be a sort of general jobber to live in here. Retired at 10:40.

MARCH 20.

First day of Spring. No change in my health, general feeling, or breakfast. That sentence sounds monotonous, and, although I awoke at 5:30, I have kept busy enough to keep from feeling so. Took half an hour's constitutional after breakfast, making the circuit of my quarters about 999 times. Then sat down and got to work. This chair and I are getting pretty well acquainted. It is beginning to act as a mould on me, so that I am growing into the shape of the chair.

I try to remedy this by placing the pillows in different ways from time to time. One cannot, however, get two things arranged in more than ten different ways. I am beginning to get acquainted with all ten ways now, so the chair wearies me. I would like to get down and stretch out on the rugs and pillows on the floor for a change, but that is forbidden, as I would heat up the floor of the apparatus too much in proportion to the rest of the chamber. I even have to keep my feet on a cushion or something when I sit down to avoid all such unequal heating.

Spent the morning calculating. It is a comparatively nice day, and I have had quite a few visitors already, which has made the time pass very pleasantly. Spent the afternoon much the same as the morning. Had a lot of visitors, including newspaper reporters from New York and Boston.

It has been decided that I come out some time to-morrow, although I said I was willing to remain till Monday. They wish, however, to start an experiment with Smith on Monday, hence the above decision. I have grown so accustomed to this place that I am afraid I will miss it for a day or two, and will have to grow reaccustomed to the outside world. Retired at 10:30. Visitors, nineteen.

MARCH 21.

Woke up at 4 and was unable to go to sleep again. The thought of getting out to-day kept me too nervous. Probably I ought not to have been told I was to come out until this morning. This is a beautiful day on which I make my reappearance among ordinary mortals. Find I shall be released about 11 a. m. Have just had breakfast. Appetite still good, but shall be ready for a change to-morrow morning. Haven't had time to read any in "Les Miserables" for a day or two, as I wished to finish my calculating before I came out of here. It will keep me, however, working right up till I come out.

12 M.—Was released at 11 as expected. As I watched them dig the putty away from the glass I could hardly believe that I would soon be where I could take more than four steps without turning around and where I could see more of the world than the laboratory window disclosed. But such was the case, and I am now a free man again. Weigh two pounds more than on etering, so the confinement hasn't hurt me in the least, and I feel as well as ever. Thus ends what was to me a very novel experience.

And now as to the theoretical, scientific and practical importance of the respiration calorimeter and of my experiment:

The ultimate object of the respiration calorimeter is to demonstrate the law of the conservation of energy in the human body, or animal body in general. This law has always been supposed to hold true in the animal body, as well as in the physical world, and it undoubtedly does; but it has never been absolutely demonstrated. Now this means, to give a simple illustration, that a given weight of bread consumed by the body furnishes as much energy minus the energy represented by waste products, as the same weight would give burned by ordinary means, and used, say, to run a steam engine.

To do this it is necessary to take account of all food consumed and all waste products, of all heat given off by the body and all gases exhaled from the lungs. The calorimeter itself is the apparatus for determining the last two, although a dietary experiment is always run in connection with a calorimeter experiment, to determine the first two.

The results from the experiment with me are by no means fully worked up as yet, so its value on these points is unknown.

The most evident result of this experiment was, however, that a man could go into the calorimeter and spend almost any length of time without experiencing any deleterious effects from it. The plan of confining a man, then, in this way, to experiment upon, is entirely feasible.

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Thinking into a Thought Machine.

A MACHINE THAT READS YOUR SECRET THOUGHTS.

A Most Astonishing Discovery Which a Practical Washington Inventor Declares He Has Just Completed.

A Washington inventor claims to have discovered a means of transmitting thoughts direct from the thinker's brain to a registering machine. From this machine anybody can read the thoughts. A man may dictate to a stenographer without uttering a word—by simply thinking. The machine may be placed near a murderer's head, and, in spite of himself, his most secret thoughts will be accurately registered. These are the inventor's solemn and positive claims. When his patents are secure, he promises to give the Journal a practical test of his astonishing invention.

Last week I saw at Washington a new and wonderful invention which is as really downright astonishing, when fully perfected, as the telephone, the phonograph, or the X ray.

It is a machine which will record the thoughts. It will pinion human fancies and dreams in their flight and give them existence as soon as they are born in the mind of man.

It will lay the human soul under a microscope, and the most secret thoughts and emotions can be discovered without the knowledge of the person who is thinking.

It will retain thought just as the phonograph cylinder retains the human voice for months and years. You can think into it to-day, and to-morrow send it across the ocean, and there the inner workings of your mind can be understood when you yourself may be forgotten.

Not only are human thoughts recorded in this wonderful machine, but the emotions of an animal, the strange force we call instinct, can be readily recorded and understood.

The possibilities of this invention are stupendous and terrible. The innermost thoughts will be exposed, just as the Roentgen ray penetrates the flesh. Criminals can be detected before they have committed crimes; hypocrites will be unmasked; deceit will be impossible, for the mind will be an open book where all may read.

The visions that float through the mind of an artist will be caught as they pass. The dreams of the poet will live forever; the plans of the statesman, the brain-workings of the genius, the longings of the lover, all the intangible fancies of thought will be recorded as they are born.

NOT FANCY, BUT FACT.

All this sounds like a fairy tale, but it is absolutely true. I was quite as incredulous as any one could be when I first heard of the discovery.

The thought machine is the invention of a poor Washington scientist. He is known to the scientific world, but to the world at large is practically unknown.

Yet Julius Emmner has made many discoveries and inventions. Like all inventors he has suffered from the depredations of idea-thieves, who have utilized the work of his brain to reap profit for themselves. He is now fighting the Bell Telephone Company on one of their patents.

I saw Mr. Emmner at his modest home in Washington, and he told me of his marvellous invention, for which he has just applied for a patent.

He is a small, quiet man, of a German type, reserved almost to brusqueness. He is unassuming in manner and does not care for publicity.

It was with considerable difficulty that I prevailed upon him to tell me of the "thought machine," which is extremely simple looking—an elaborate arrangement of cylinders, wires and electrodes, connected with a small motor.

"The idea of this 'thought machine' came to me about three years ago," he said. "It was the result of research and scientific work. The idea that sight and hearing were caused by the vibrations of light and sound caused me to wonder if the force of thought were not something actual. If it were actual, it must exert a tangible power by vibration similar to light and sound. And if this were so, then a machine could be constructed which would be sensitive to the brain vibrations or mind waves.

THE BRAIN AN ELECTRIC BATTERY.

"It has been said that thought is not actual, but it has always been my opinion that the brain is a sort of electric battery. I hold that thoughts emanate from it as rays do from electricity; that these brain currents penetrate the atmosphere and cause vibrations just as a tuning fork does when it is struck.

"Hypnotic experiments have proved that one brain can exert a certain force over der, which correspond with the vibrations." are transmitted just as sound would be carried. The machine, you see, consists of a cylinder about six inches long and an inch and a half in diameter. It is coated with an exceedingly sensitive chemical, which is easily decomposed by the electric currents.

"Here in front is this fine needle of aluminum, coated at its point with chemicals, and resting on the cylinder, while the base is set in a diaphragm of aluminum, only a very thin plate of the metal being used. This open, horn-shaped funnel conveys the vibrations direct to the recorder. The machine is put in action by means of this small motor, which revolves the cylinder. The thought vibrations cause the needle to make impressions upon the cylinder, which correspond with the bivrations."

"How do you know that a breath of air or some motion in the room does not cause the vibration?" I asked.

"Because those movements do not produce such marks. I have experimented hundreds of ways to prove that the brain force is the only one which produces such impressions. Of course, there is an electric induction connected with the apparatus. The one whose thoughts are to be read is seated about three feet in front of the machine and voluntarily pursues any train of thought.

THE RECORD OF THOUGHTS.

"The motor works, and within a minute or two the cylinder records the thoughts. Now a finer and more delicate needle is inserted and connection made with the secondary induction coil. Then wires leading from electrodes are placed at the base of the brain of the person who is to read the thoughts that have been recorded. The ideas which passed from the mind of the thinker are now transmitted to the mind of the reader with perfect accuracy. The thoughts are unconsciously received; that is, not by sound or word. The idea frames itself in the mind of the reader as if he had conceived it himself.

"I have made many experiments, one interesting one to prove that this thought force is exerted unconsciously, and to make a good test, a woman was hypnotized and placed near the machine.

"She was unconscious of her surroundings without any control over her own mind. When I took the record of her thoughts I found that her mind had been engaged with domestic affairs all the time. Another experiment was made with two male friends. I thought into the machine and had my friends place the electrodes at the base of the brain.

"When they had expressed their wonder and surprise one of them was placed near the cylinder. When I read the record of his thoughts they were to the effect that he believed I had hypnotized them. When he left my home that evening he told me frankly that he believed I had hypnotized his companion and himself. He could not comprehend the wonders of the thought machine."

HOW THOUGHTS LOOKED TO THE EYE.

"How do thoughts differ in appearance when recorded?" I asked the inventor.

"As thoughts differ in intensity, so they are recorded when the cylinder is taken from the bath of acid which leaves the decomposed record showing plain brought a dog in front of the cylinder then teased it until it snapped and violently. The record showed the agitation of the dog's mind. It would possible that we might learn some about the mysterious instinct of ani through this machine."

"What practical usese can the thought machine bep ut to?"

"They are without number. We will able to keep a record of our thoughts which we can read as we wish. We will be able to find out the thoughts of others when they are unconscious of the operation.

"One of its best uses will be to read the minds of criminals and to examine the insane. Insanity can be studied through this machine as it has never been before. The workings of crime can be traced, and the detection of criminals made easy.

"It can also be used to communicate with the deaf, who can, in this way, converse intelligently. Deaf mutes can be taught through this machine, so that they will learn with marvellous quickness. The intelligence of the thinker will become theirs unconsciously.

"The merchant can think the replies to his letters into the machine without speaking a word, and his bookkeeper can write them out from the cylinder. The author will not have to dictate to a stenographer, for the thought machine will preserve his ideas with absolute fidelity. The architect can preserve his plans, and the painter can have his canvas ever before him. The dreams of sleeping people can be recorded, and we will be able to study this mysterious unconscious force.

"Deceit can be easily detected, and also and motives will be no longer hidden. Murderers and thieves can no longer the mask of innocence, for under microscope it will be a simple matter discover them. The uses of the machine are beyond calculation."

Scientists in Washington are of the opinion that Emmner has made a discovery equally important as any of the great discoveries of the past. His thought machine has been tested in many private experiments.

K. M.

WHO CAN SOLVE THIS PROBLEM?

It is, of course, only a question of time when "Greater New York" will be an accomplished fact—when the words "New York" will mean the 3,000,000 people of Manhattan Island, Brooklyn, Long Island City, Staten Island and half a dozen neighboring towns.

What figure, symbol, character or design shall hereafter be used to represent "Greater New York?" What shall the cartoonists, the orators and the writers agree upon to take the place of Old Father Knickerbocker, who has stood as the allegorical representative of New York for so many years?

This is an interesting problem which the Journal would like to have its readers solve. Next Sunday the Journal's staff of artists and cartoonists will present their best ideas. The Journal will also be glad to publish suggestions from its thoughtful readers.